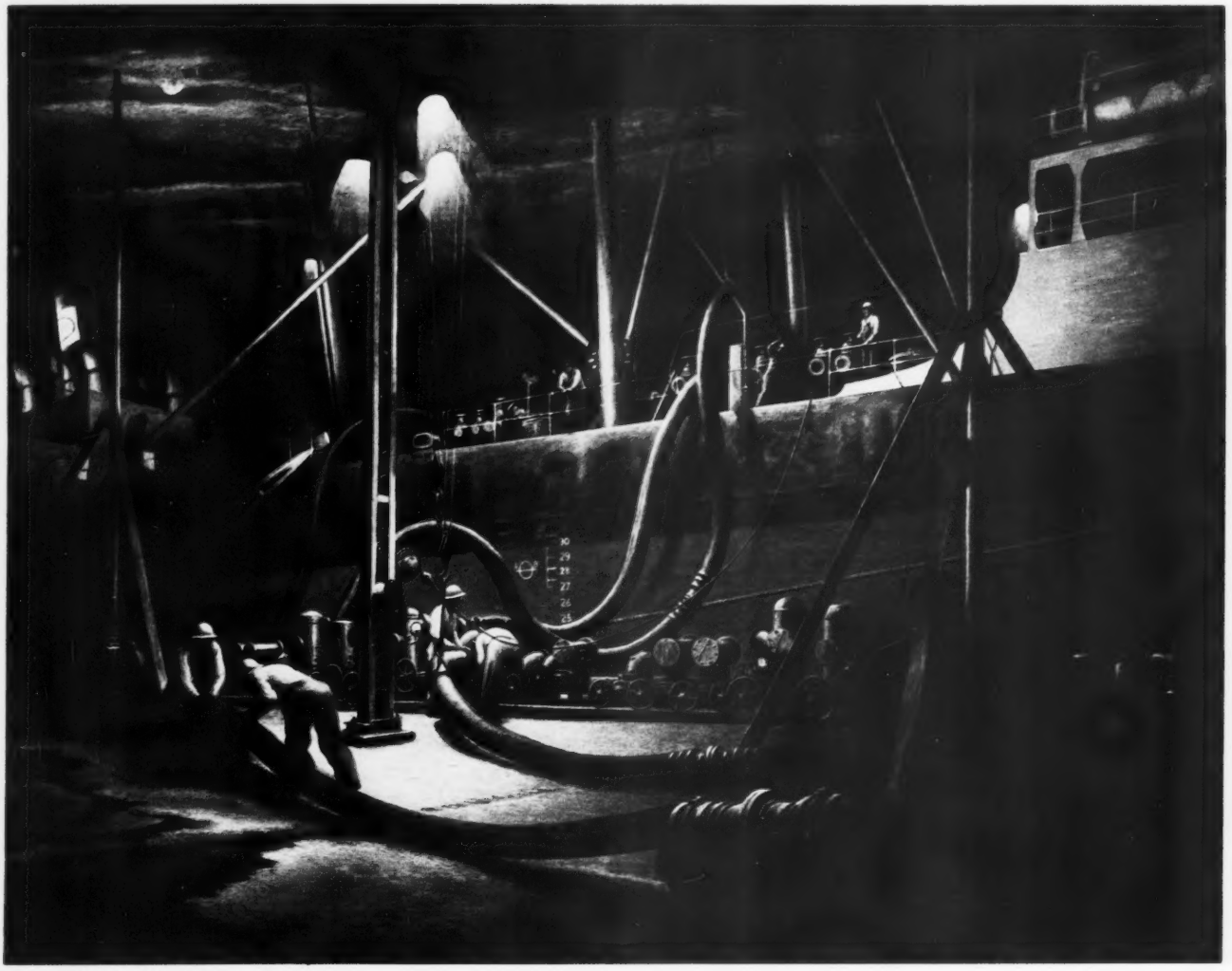


Tanker Loading at Night

The HUMBLE WAY

JULY-AUGUST, 1947

The HUMBLE WAY

Vol. III JULY-AUGUST 1947 No. 2

Record demands, exceeding even the war peak, call for the maximum quantities that the oil industry can deliver. Except for local difficulties, due to shortage of transportation, it should be possible to meet demands for the next twelve months if there are no interruptions of operations or other unusual developments.

IS THERE AN OIL SHORTAGE?

THE petroleum industry in the United States is now supplying more oil than ever before—more, even, than during the war. Last year, domestic production of petroleum liquids exceeded 5,000,000 barrels daily, or 25 per cent more than in 1941. Current domestic production of 5,500,000 barrels daily represents a supply of one and a half gallons daily for every person in the United States!

Why, then, should there be any question of a possible oil shortage? The answer is as simple as the solution of the problem is difficult. There are more customers for oil and its products than ever before, and these customers are using unprecedented quantities of oil. Thus, although the oil industry can point to record supplies, its customers may wonder why they may not be able to buy all the products they want. To understand the divergent views created by this situation, which range from fears of an immediate shortage to assurance that the U. S. will always have plenty of liquid fuels, one must consider the facts about current supply and demand.

In the United States, consumers have become accustomed to oil supplies large enough to meet every demand. Even though supplies today are larger than ever before, the supply situation is not easy because of the tremendous growth in consumption. Between 1941 and 1946, demand for oil increased nearly a million barrels a day, or almost 25 per cent in five years, in spite of the fact that manufacture of automobiles and other civilian oil-burning equipment was at a standstill for most of that period! Fortunately for the nation's war effort and its reconversion to peace, the oil industry was able to meet that growth in demand. The interruption of its normal expansion and the reduction of its oil stocks during the war, however, placed the industry in a position that makes it difficult to meet further large gains in demand such as are occurring now.

Sharp Gain in Demand

The increase in 1947 demand over last year is expected to be considerably higher than the average of about 5 per cent annually during the past quarter century. Demand in the first half of 1947 was about 10 per cent higher than a year ago, and for the entire year it will be about 8 or 9 per cent higher. The increase in demand will be about 425,000 barrels daily, an amount equal to the production of Louisiana, which ranks third among the states in oil production. The magnitude of the added load carried by the petroleum industry is shown by the chart on page 2, comparing supply and demand in 1941 and 1946.

There are many reasons for the current level of demand. Gasoline consumption is higher than before the war, although the number of cars is about the same. Motorists are driving more because generally their incomes are larger. Many of them are taking to the road on some of the trips that rationing prevented during the war.

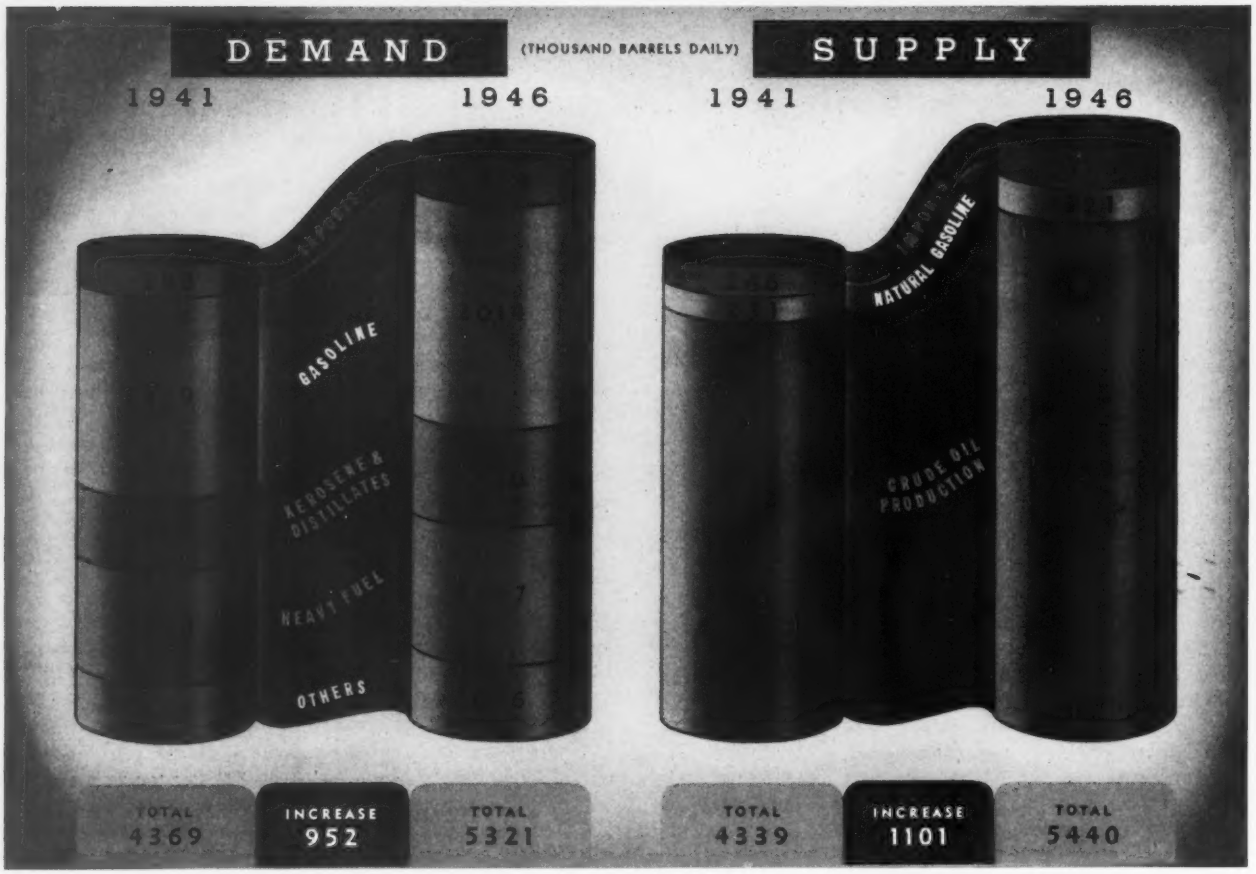
The largest growth in demand since 1941 has been for kerosene and distillate fuels. Most of this increase may be traced to wider use of oil burners for home heating and of diesel engines for railroads. More people are turning to oil for home heating because it is clean and convenient, and because coal supplies have been relatively uncertain. Expansion in the operations of the Navy and higher industrial production are the chief explanations for the change in consumption of heavy fuel oil.

The steady growth in demand for petroleum has altered materially the proportion of oil and coal in supplying domestic energy requirements during the past quarter century. In 1920, oil and gas supplied 16 per cent of all U. S. energy requirements; today, they supply nearly one half, with the other half being supplied by coal. Compared with 1920, current oil and gas production is four times as great, while coal production is about the same. Oil now supplies some industrial demands that formerly would have been met by coal, and home owners continue to show a great preference for oil and gas for heating.

The oil industry has done its part well in meeting demands. It supplied all essential demands during World War II, and is continuing to meet even larger post-war demands. If it had not been for shortages of materials and men during four years of war, the industry would have drilled more wells, built more pipe lines, and increased refinery capacity, and thus would have been in a better position to take care of present demands. As it is, the industry is now trying to catch up, but is still being hampered by a shortage of steel and other materials.

A recent survey by the American Petroleum Institute shows

BEVY OF VALVES which control the flow of various grades of crude oil at Humble Pipe Line Company's Webster pump station.



that the industry's expansion program for 1947 and 1948 calls for a record expenditure of four billion dollars. It is hard to grasp the significance of that program. In the next two years, the industry's expansion will amount to more than 20 per cent of its present investment. About half of that four billion dollars will be spent for exploration and development of production; one billion each will be spent for refining facilities and for transportation and marketing facilities. Even under normal circumstances, such expansion would be a tremendous job. It will be made all the more difficult by the shortages in the postwar reconstruction period.

The effect of that expansion will be to increase the operating capacity of the industry and, thus, to solve some of the industry's more pressing problems. There exists today enough crude oil productive capacity and refinery capacity to meet current demands, but the margin of safety is not as large as it should be to meet unforeseen contingencies. One of the most difficult problems of the moment is transportation;

MOTORISTS OWN about the same number of cars as before the war but are driving more miles, which means higher gasoline consumption.

INCREASED USE of fuel oil for home heating and of heavy fuels by railroads and industrial plants is partly responsible for high demand.

enough facilities are not now available to move oil economically to places where it is needed.

The transportation shortage can best be illustrated by the present plight of the mid-continent area of the United States, embracing the states of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North and South Dakota, Ohio, Oklahoma, and Wisconsin. There is sufficient refining capacity in the area to meet demands for products, but crude oil production has declined to the extent that all production in the area, plus crude oil moved from Texas by existing pipe lines, is still short of the amount needed to operate the refineries at capacity. The solution, of course, is to build more pipe line capacity from supplies in Texas to the mid-continent. This would already have been done but for the shortage of materials. As an example, one crude oil pipe line from West Texas to the mid-continent, with a capacity of 150,000 barrels a day, has been planned and pipe ordered for many months, but first delivery of pipe is not expected before late 1947. Completion of the line is now scheduled for 1948. Meanwhile, demand in the area has continued to grow, with the result that stocks of products at the end of June were about 10 per cent below 1946 mid-year levels in the mid-continent area. This situation has forced a number of companies operating in the mid-continent to allocate supplies to dealers. Others are resorting to high-cost tank car shipment of crude oil and refined products to supplement lagging supplies.

The transportation bottleneck also appears in moving crude oil from West Texas. Pipe lines from this area are operating at capacity, but still they are not able to meet all the demands for West Texas oil. In recent months, oil companies have been moving from 50,000 to 85,000 barrels a day of crude oil out of West Texas by railroad tank car, at very high cost compared with pipe line rates. An additional 50,000 to 75,000 barrels daily could be produced in West Texas, but the railroads do not have the cars or engines to move any more oil. Minor increases in pipe line capacity out of West Texas have been achieved by installing "loops" on existing lines. Humble's line capacity was recently increased by 11,000 barrels a day by this method.

Another basic problem of the industry results from seasonal fluctuation in demand. Back in the years when roads and automobiles were not suited to winter driving in many areas of the country, gasoline consumption dropped sharply in the winter from the peak summer level. Today the situation is reversed. Winter demand exceeds summer demand by several hundred thousand barrels daily, largely because of widespread use of oil for heating, but also because all-weather roads and better automobiles have reduced the decline in use of gasoline during the winter. That means that petroleum products must be accumulated in the summer to be available for higher winter demands.

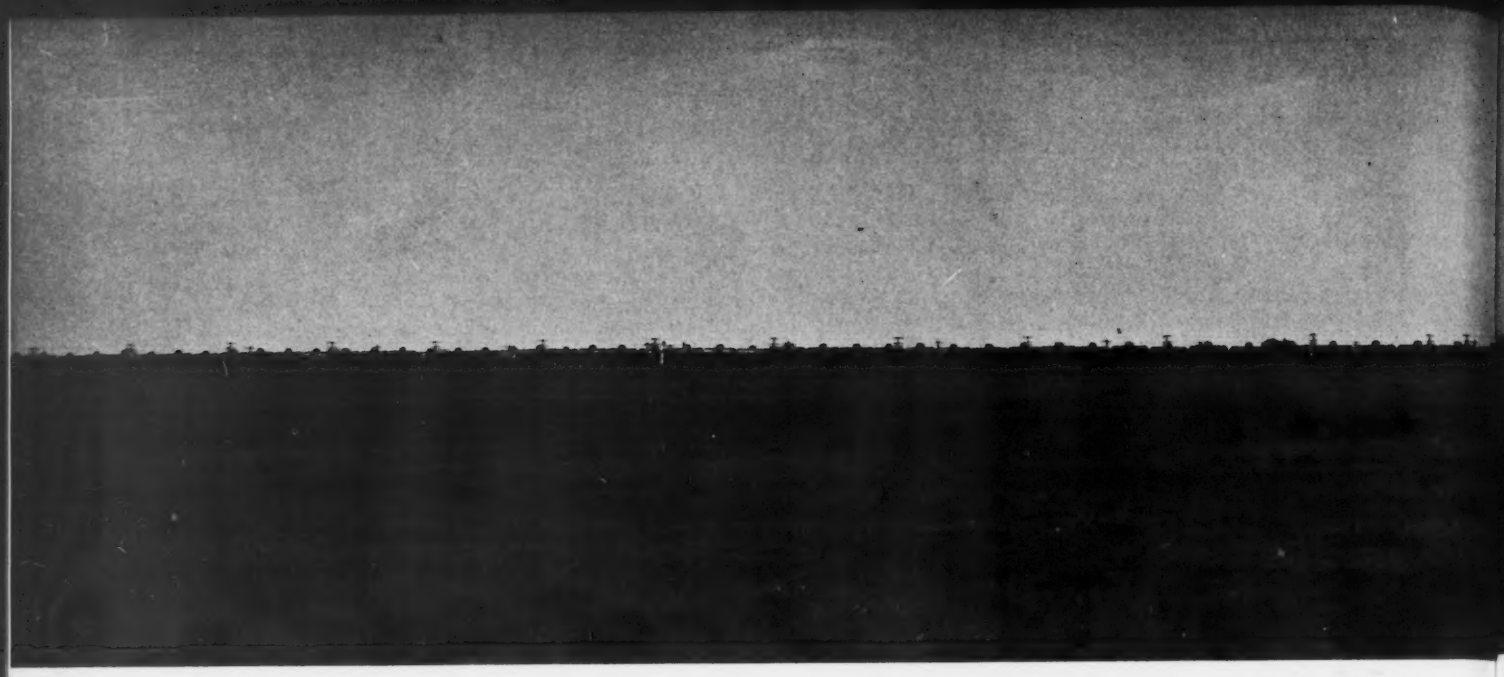
Petroleum products have been accumulating recently at the rate considered necessary to meet next winter's demands. At mid-year, U. S. stocks of gasoline, kerosene, distillate fuels, and heavy fuels were 197 million barrels, about two per cent higher than last year. Stocks on the East Coast were about the same as last year; in the Gulf Coast, Rocky Mountains, and the Pacific Coast stocks were about ten per cent higher than 1946; but in the mid-continent area, stocks were about ten per cent below last year.

The petroleum outlook for next winter is fair for the nation as a whole. If the industry continues to operate at its present near-capacity rate without interruptions from strikes or other causes, and if the winter is not unusually severe, supplies should be adequate to meet demands. It is expected that in some areas, particularly in the mid-continent, difficulties will be encountered from time to time because transportation may not be available to move the desired quantities of oil to the right places at the right time. The systems of allocation already adopted by many companies operating in the area should help all consumers to receive a fair share of available oil, which will generally be adequate, although some may not get as much as they would like. Problems in other areas may develop if additional consumers attempt to use oil in place of coal.

The task ahead of the oil industry is tremendous. Handling record quantities during the coming winter will tax facilities and the ingenuity of the petroleum industry. It now appears that generally demands can be met, but it will take the efforts of everyone in the industry working to deliver the last gallon that can be produced and refined. Those who produce the oil must see that there is no lag in development and production; those who operate the pipe lines must deliver maximum quantities; refinery personnel must continue to process record volumes. If all these things are done, and the weather does not "conspire" against the industry, there should be no real oil shortage. This accomplishment would justify the faith the public has in the oil industry to do its job and do it well.

EXPLORATION FOR new oil reserves is taking geophysical crews into Coastal swamps and into the deeper water on the continental shelf.

WILDCAT WELLS drilled last year by the industry numbered 4,300, but reserves discovered per well were only one-tenth as high as in 1935.



ACROSS THE WESTERN PRAIRIES MILE-LONG OIL TRAINS CARRY 82,000 BARRELS A DAY TO REFINERIES AND TERMINALS

West Texas Oil MOVES BY RAIL

AT COSTLY new loading racks near Midland, McCamey, and other West Texas communities hundreds of railroad tank cars are being filled with crude oil daily and are being rushed across the state to tidewater and to unloading terminals where pipe lines take over the job of moving the oil to tidewater and to refineries. Still other long tank trains are steaming northward across the Plains carrying thousands of barrels to Mid-continent refineries.

Why is this high-cost method of transportation being employed when pipe line movement is much more economical? Simply because the demand for products is considerably above existing pipe line capacity of some 650,000 barrels per day, and pipe mills are booked with orders for the next two or three years.

Peacetime America is consuming record-breaking volumes of petroleum products—between eight and nine per cent more than last year—and although the oil industry is making every effort to produce enough to meet the demand, transportation and distribution problems have become difficult.

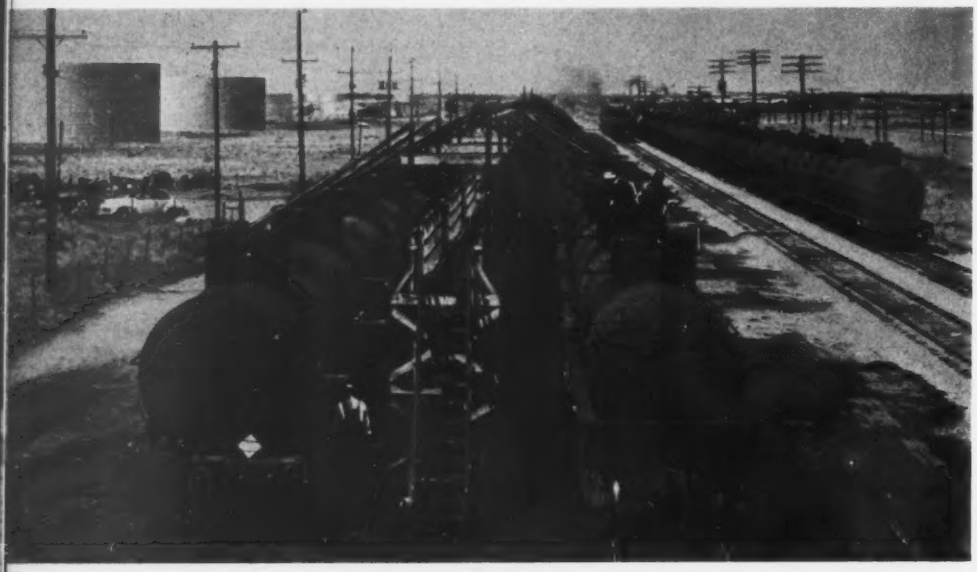
Why not more pipe lines, then, to move the crude oil from fields to refineries? It takes time to lay major trunk lines, and since war's end material shortages have prohibited the construction of any such lines. Loops have been laid on lines leading out of the West Texas area to increase capacities, and there are in the planning stage two major crude oil lines from the Permian Basin. But until these arteries are completed the task of moving increased production today and for some time to come falls on the railroads.

Railroads operating in the area have cooperated in this emergency, but have been handicapped by tank car shortage and the necessity of moving perishable freight. Every tank car in the United States that can be spared has been pressed into this service; locomotives and crews have been assigned to this service and are exerting every effort to expedite the movement of some 400 tank cars per day of the available 2,000.

LOADING OUT crude oil is done fast and efficiently to insure a minimum amount of idle time for the limited number of tank cars.

AT A 74-CAR LOADING RACK NEAR MIDLAND (BELOW) 60,000 BARRELS ARE LOADED DAILY FROM NEARBY TANK FARMS

CONSTRUCTION CREWS hurriedly laid feeder pipe lines to connect large existing crude oil tank farms with loading racks built especially to help break the transportation bottleneck.



LOADING RACKS were constructed by oil companies at considerable expense when it became necessary to supplement pipe lines with rail shipment to meet the growing demand for crude oil.

Of this number about 1600 are constantly being shuttled between West Texas loading racks and East Texas pipe line terminals. Another 400 tank cars are moving between the Permian Basin and Mid-continent refineries.

Of the 82,000 barrels moved daily by rail, more than 60,000 barrels are being loaded at a 74-car rack near Midland, Texas. About 40,000 barrels of this volume is being shipped by Humble Oil & Refining Company; an additional 10,000 barrels are moved by Humble every day from the Company's recently completed 50-car loading rack at McCamey. Other producers are shipping from Wink and Big Spring, and from Jal, New Mexico, a total of approximately 10,000 barrels a day.

So much of the extra oil to meet growing demands is being produced in some of the 262 oil fields in the vast Permian Basin area because that area is in better position to supply the extra oil than any other single region. Allowables have been increased by the Texas Railroad Commission in many of the Basin fields without endangering the productive lives of the fields and without deviating from long established, sound conservation practices.

In the program to move as much oil as possible, oil company personnel are engaged in activities reminiscent of the busy war years. In addition to hurried construction of loading racks, crews have been busy laying short feeder pipe lines from crude oil storage terminals to loading racks in the West Texas area, and adding facilities at unloading terminals in the East Texas area. All of these activities and expenditures of money are aimed at one goal—to supply the demand for peace as in war.

Thus, a familiar war-time scene is being re-enacted in Texas. Long trains of tank cars are rolling across the western plains, taking the right-of-way through busy, big-city staging yards, and chugging noisily to their destination in East Texas and the mid-continent.

Extra oil is being delivered. The transportation bottleneck is being solved, at least partially, and another chapter is being written into the records of jobs well done—by the oil industry for the public interest.

CLANKING OIL trains move eastward and northward from the productive Permian Basin area in a manner reminiscent of the war years.

IN THE SHADOWS OF DERRICKS IN THE EAST TEXAS FIELD, WEST TEXAS OIL IS UNLOADED AND PIPELINED TO THE COAST

BIG HOSES DRAIN THE OIL FROM TANK CARS AND TRAFFIC EXPERTS RUSH THE EMPTIES OUT AS QUICKLY AS POSSIBLE

Three Will Get You Ten

Big Charlie explains sixty months certain feature of Annuity and Thrift Plan to young refinery employee

"YOU KNOW," Tom remarked thoughtfully as he and Big Charlie walked with hundreds of others toward the refinery gate, "it must be like graduating from school—this business of retiring from the Company. You're bound to be proud of yourself for making the grade, but it must be a little hard leaving all the familiar faces, places, and the certainty that your day's all cut out for you when you wake up in the morning."

Tom and Big Charlie had just attended Frank Morris' retirement party over at No. 2 Pipe Still. Frank, who'd been with the Company 27 years and was retiring on his 65th birthday, was a popular and beloved figure around the refinery. There'd been the retirement pin presentation, of course; and, since Frank was going to run his "ranch" full time now (50 sweet little acres, as he described it), his friends had presented him a pair of cowboy boots. They'd given him a rod and reel, too, and, just for fun, a rocking chair which they figured Mrs. Morris' cat, Esso, would occupy most of the time.

"He did get a lot of nice gifts," Tom continued.

"But the best gift is just beginning," Big Charlie mused. "Frank and the Company've been working on it for a long time, and it should keep him and Mrs. Morris comfortable and happy for the rest of their lives."

"You mean his A. & T.?"

"That's just what I mean—his savings plus the Company's contributions through the Humble Annuity & Thrift Plan for employees. Naturally, Frank's not planning to operate that ranch at a dead loss, but he can if he wants to. That's the point. He can do about as he pleases from now on, within reason, of course."

Big Charlie punctuated his words with an anticipatory smile.

"Say, you're not far from the goal

His friends had presented him a pair of boots . . . a rod and reel . . . and just for fun a rocking chair . . .

posts yourself, are you Charlie? Seems like five years ago when you convinced me that going into the A. & T. Plan was the best step a man could take, you had about ten years to go until that old retirement day," Tom asked the veteran refinery stillman as they reached the car.

"You're right. In five more years I'll be right in Frank's shoes. In fact, I was figuring with Frank last night on what I'll have coming from the Plan at that time. You know, Frank Morris and I came to work for Humble at the same time 27 years ago. That was in the days of the old Ranger boom. We transferred from the Production department down here to the refinery two years later and have been here at Baytown ever since."

They climbed into the car. Charlie reached into the glove compartment and drew out some papers and a booklet.

"Looks like we beat Bob out. While we're waiting, Tom, you might be interested—and I'll bet surprised—to hear what the Company and I have been able to lay aside for my retirement. I've got all the dope right here."

"Present the evidence, Charlie. I've been in the Plan to the limit since I became eligible," Tom smiled, "mainly because you said it was the thing to do, and I trusted your judgment. However, I've never really understood all the ins and outs of the Plan. Maybe you could straighten me out on a few things, and how about those changes in the Plan that we heard so much about around the first of last year?"

Charlie thumbed through the booklet. "High Spots of the Humble Annuity & Thrift Plan."

"Well, it would take us all night if we went into every section and provision of the Plan, but I'll try to tell you simply what it has meant for me, and it can mean about the same for you or any other employee, regardless of age or sex."

Charlie, who had participated in every kind of savings plan the Company ever sponsored, and since the Annuity & Thrift Plan was inaugurated in 1936 as such had participated to the full extent, knew what he was talking about.

"We won't go into the Thrift angle of the Plan right now," Charlie continued. "The Annuity feature seems to be the thing that stumps you young men. You sort of hate to get your money tied up with the prospects of not seeing it again until you're 65."

"You just about hit the nail on the head, Charlie. We need convincing."

"Well, Tom," Charlie laughed, "how do you like these odds: invest $3—forget about it—and when you're 65, get $2 a year for the rest of your life? Or take it this way: invest $3 and you are guaranteed to get $10 in return, and if you live as long as the average person does after reaching age 65, you will get several times this. Three will get you ten is a pretty good bet anywhere. Don't you agree?"

Tom held up a restraining hand.

"Now, wait a minute. What's the

deal?" he asked in good humored puzzlement.

Charlie opened the pamphlet explaining the A. & T. Plan.

"Well, under the revised 1946 Humble A. & T. Plan," he read, " 'the Company contributes more toward the purchase of your annuity than you do, and each participating employee is provided with the same amount of annuity for each dollar of his own contributions, regardless of age or sex.' "

Charlie emphasized the "regardless of age or sex."

"You know how you contribute to the Annuity feature of the Plan—according to your earnings class. The annuity deduction is made once a month from your check, and the amount you pay in is the same if you're 25 or 45—if the wage is the same," Charlie explained.

Tom interrupted.

"But all kinds of annuity insurance gets more and more expensive the older we grow. How does the Plan manage for that?"

"The Company makes up the difference between your contribution and the cost of the annuity which your contributions entitle you to under the Plan. Naturally they have to add more for me than for a man 20 years younger. For instance, here are the actual figures. You're 30 years old. For every dollar you contribute for the purchase of annuities, the Company is currently contributing $1.88. I'm 60. For every dollar I put in, the Company puts in $6.05—and so on, up and down the scale."

"That does mean, then," Tom said, understanding, "that I can provide as much retirement income per dollar as you can, and vice versa. How about my sister? She's a stenographer in the Houston office and has been in the Plan about a year. Women retire at 55, and that should make her annuity insurance more expensive. Is there some arrangement whereby she can provide as much retirement income per dollar as the men?"

"Well," Charlie explained, "the Company has to contribute a lot more towards providing this annuity for women, but their dollar buys just as much annuity as yours or mine. Your sister is 20, isn't she? Well, for every dollar she contributes to the Plan for annuities, the Company is contributing $4. Say she was 40—for every dollar of her money, the Company would contribute $7.39, and so on."

"Amazing," Tom exclaimed, "but tell

Charlie opened the pamphlet explaining the A & T Plan and read to the younger man...

me more about this three for two and the three will get you ten wager."

"I really didn't mean to imply there was a wager or gamble involved. There's no gamble with Humble's A. & T. Plan!"

Charlie adjusted his glasses and pointed to the booklet.

"I'll show you. I figured it up on the charts in this little book. Through the arrangements I just explained to you, for every $3 you put in during your working lifetime to buy annuities through the Plan, you will get back $2 every year of your life, commencing at the age of 65. Your sister would begin receiving hers at 55."

Charlie got out a pencil and paper.

"Now, figure it out for yourself. That means that in the first one and a half years after you retire at 65, you will have gotten back all of the $3 you paid in, and after that you continue getting $2 a year," Charlie explained, "and that's all gravy."

"Now slow down—you mean I keep on getting $2 a year as long as I live? Why, at the end of five years, for my three bucks, I will have collected ten. My father is 83 and still is going strong. If I live to be 80, I'll get $30 for every $3 I invest. Are you sure that's right?"

Tom could hardly believe it.

Pointing to the proof in the A. & T. booklet, Charlie explained that this was one of the finest features of the liberalized A. & T. Plan which became effective on January 1, 1946.

"That brings up another feature I wanted to explain—the three will get you ten statement I made a while ago," Charlie continued. "You just remarked that at the end of five years you'd be getting $10 for your $3 invested. Well, there's a guarantee that you or your beneficiary will get at least $10 for every $3 invested—whether you live for five years or only a short time after retirement."

Charlie read from the booklet again:

" 'Under the revised Annuity Plan there is a *sixty months certain* feature. This feature means that when retired you will receive your annuity for the rest of your life with a guarantee of payments for a minimum of 60 months even though you should die before the end of such time; in which case the balance of the 60 payments not already used up would be paid to your named beneficiary. Thus, after normal retirement, for each $3 you have contributed, you or your beneficiary are guaranteed to receive at least $10.' "

Tom interrupted.

"Now, that's one of the liberalized features of the Plan made last year, you say. What about the annuities bought through the Plan before that time? I remember signing some kind of new form when the Plan was revised. I recall there was a deadline for making this application. What was the purpose of that? Did it mean anything?"

"It certainly did," Charlie explained after referring to another booklet on the Humble Annuity & Thrift Plan, "if you signed up in the new Plan promptly, the Company made a special contribution to convert your group an-

For every $3 you put in during your working lifetime you get $2 a year for life after 65 . . .

nuity purchases made prior to January 1, 1946, to provide the same 60 months certain guaranty as applies to the annuities you are buying under the amended plan—and this is done without changing the amount of annual annuity purchased prior to January 1, 1946."

Tom studied the figures Charlie had worked out on the scratch pad, and he looked over the charts in the booklet.

"This must leave you in pretty fair shape—looking toward your retirement day, of course."

He handed the material back to Charlie.

"Yes it does, Tom," Charlie said, "but under this revised Plan, you young folks with long years of service ahead certainly have a wonderful opportunity to make a career investment. I've been in the A. & T. Plan, like I told you, since it was organized in 1936. Then, of course, annuities were bought according to age, and I was about 49 years old when I started. I figure that from group annuities accumulated under that old Plan up to the first of 1946, plus what I'll accumulate under the new Plan from then until I retire in five years—I'll have coming in about $60 a month, every month of my life. Too, I've got the beneficiary protection on the whole works."

"How much of that is accumulated under the old Plan?" Tom asked.

"That's something I want to explain," Charlie stated. "During the 10 years I participated under the old Plan, the annuity contributions made by the Company and myself provided me with $291 annual annuity, while under the new Plan—from January, 1946, until I retire in July, 1952—my own and the Company's contributions will provide me with $410 annual annuity. That shows what a great improvement this new plan is over the old one."

"That isn't hard to understand, but Charlie, what's the old '32 Plan I hear the old timers talk about so much? Were you in on that?"

"I was coming to that. In addition to the $60 a month I'll get from A. & T., I'll get about $108 a month from the old 1932 annuity plan—which applied strictly to us old timers who were with the Company before 1934 and has nothing to do with the A. & T. Plan as we know it today. It's a long story; I'll have to explain it to you some other time. But to go on—I'll have the $60, plus the $108, and in addition to that, I'll get about $45 a month from Social Security. That will add up to approximately $213 coming in every month after I retire from the Company at the age of 65 years. And remember, these figures are estimates based on the assumption that I continue to earn the same amount of money from now until age 65; if I make more, my annuity under the various plans will be increased. We haven't talked about the Thrift feature of the Plan. In addition to my annuities, I have several thousand dollars in my A. & T. Thrift account. Then, of course, I have my War Bonds and other private investments. That's not bad for an old, grey-haired stillman from East Texas, is it?" Big Charlie laughed.

"You're a wise man, Charlie," Tom remarked musingly. "Somewhere back down the line you took the long look and did the right thing."

Another big, grey-haired man walked towards the car from the refinery gate. He walked slowly and wore a thoughtful expression.

Charlie and Tom saw him coming. Charlie chuckled.

"I didn't take any look at all. Bob there—he retires next month you know—talked to Frank Morris and me just like I'm talking to you and sold us years ago on the idea of saving our money for retirement, on the idea of participating in the Company's plans from the very beginning. It was long after I started kicking in that I began to realize what a nest egg I was setting aside for myself."

Charlie started the car as Tom opened the door for Bob to get in beside them.

"It was some party, eh Bob—why don't you and Charlie come over and bring your wives for a barbecued chicken supper tomorrow night. I suddenly feel the urge to feed two guys who've done the wife and me a mighty big favor," Tom said to Charlie, who understood, and to Bob, who would understand later when Charlie told him the story—after they dropped young Tom at his front gate.

"Somewhere back down the line he took the long look and did the right thing . . . "

NIGHT AND DAY TANK TRUCKS MOVE GASOLINE TO LOCAL DISTRIBUTION CENTERS FROM PRODUCTS PIPE LINE TERMINALS

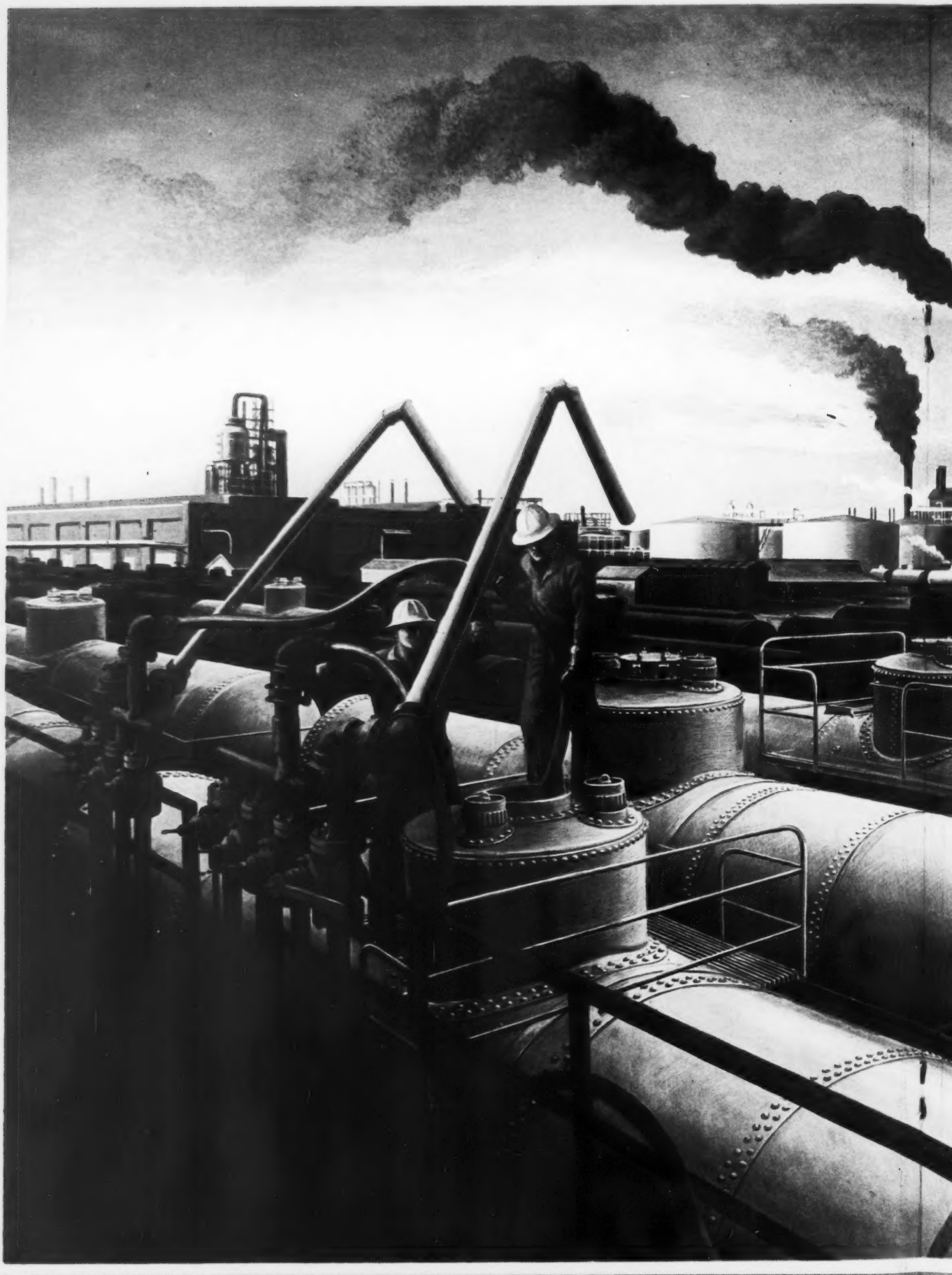
Products Move to Market

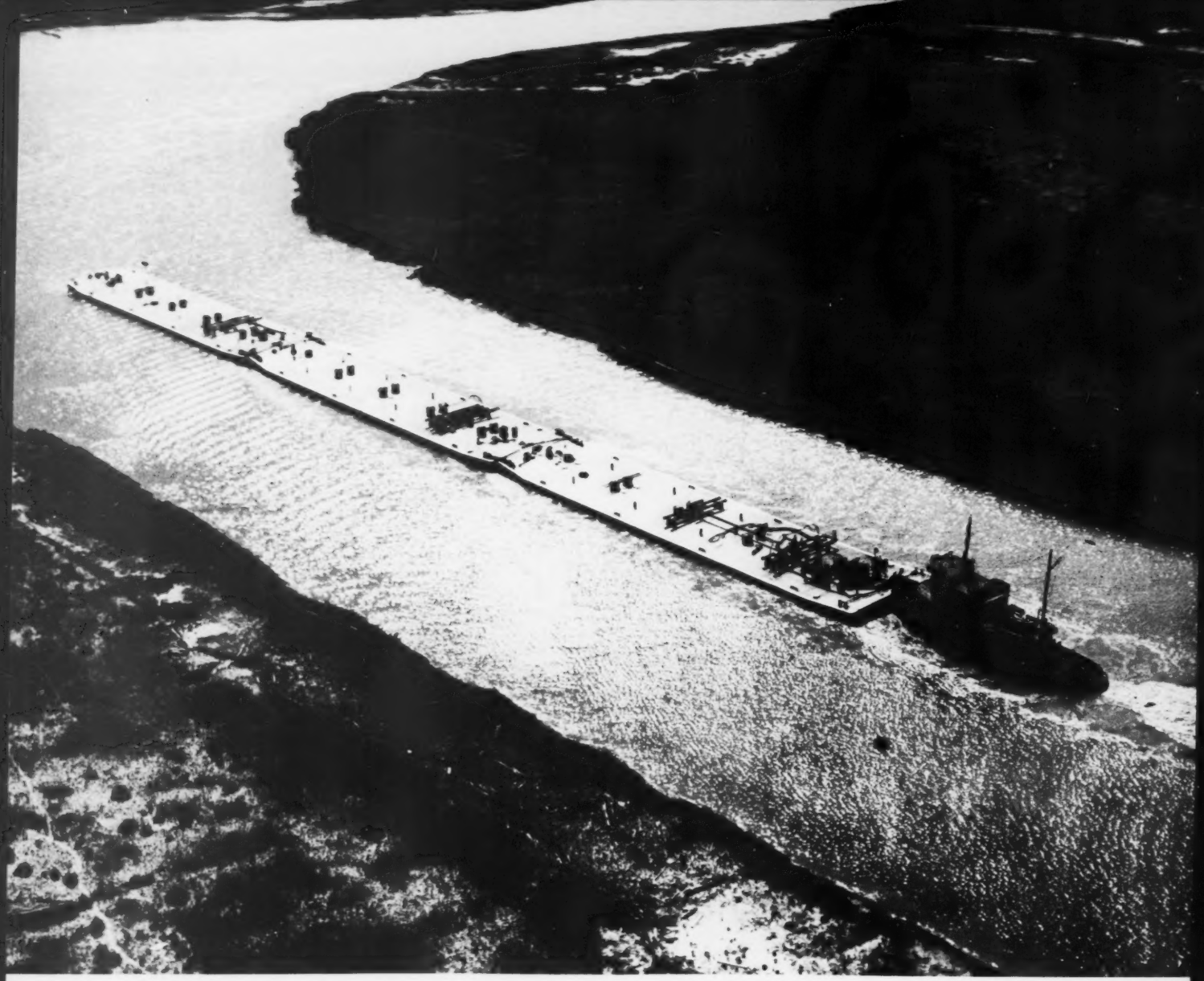
Transporting oil products from the refineries which make them to the people who use them is a huge and complex job —one made difficult by the very nature of the material handled, and by the great distances over which it must be moved.

It is a tremendously important job, too. In the final analysis, every one of us is directly or indirectly dependent upon oil in one way or another. An average of 600 gallons of crude oil a year—slightly more than 14 barrels—is needed to supply everyone in the United States with the oil products he needs. The demand for gasolines, lubricants, fuel oils and other products is now so great that transportation systems are hard put to meet the collective need. There is no magic carpet to carry it all; it takes a combination of many methods—tank ships and barges, railroad tank cars, pipe lines, and motor trucks. Hundreds of millions of dollars are invested in this special and expensive equipment, and thousands of skilled men are needed to operate and maintain it.

Artist Jackson Lee Nesbitt has caught a dramatic note—an authentic note—of round-the-clock activity in the business of moving oil products to far-off markets. On the cover of this issue, Nesbitt shows Humble workmen under the golden glow of Baytown refinery's dock lights, plying the huge hoses that load an eastbound tanker with gasoline. On pages 12 and 13,

Continued on page 14



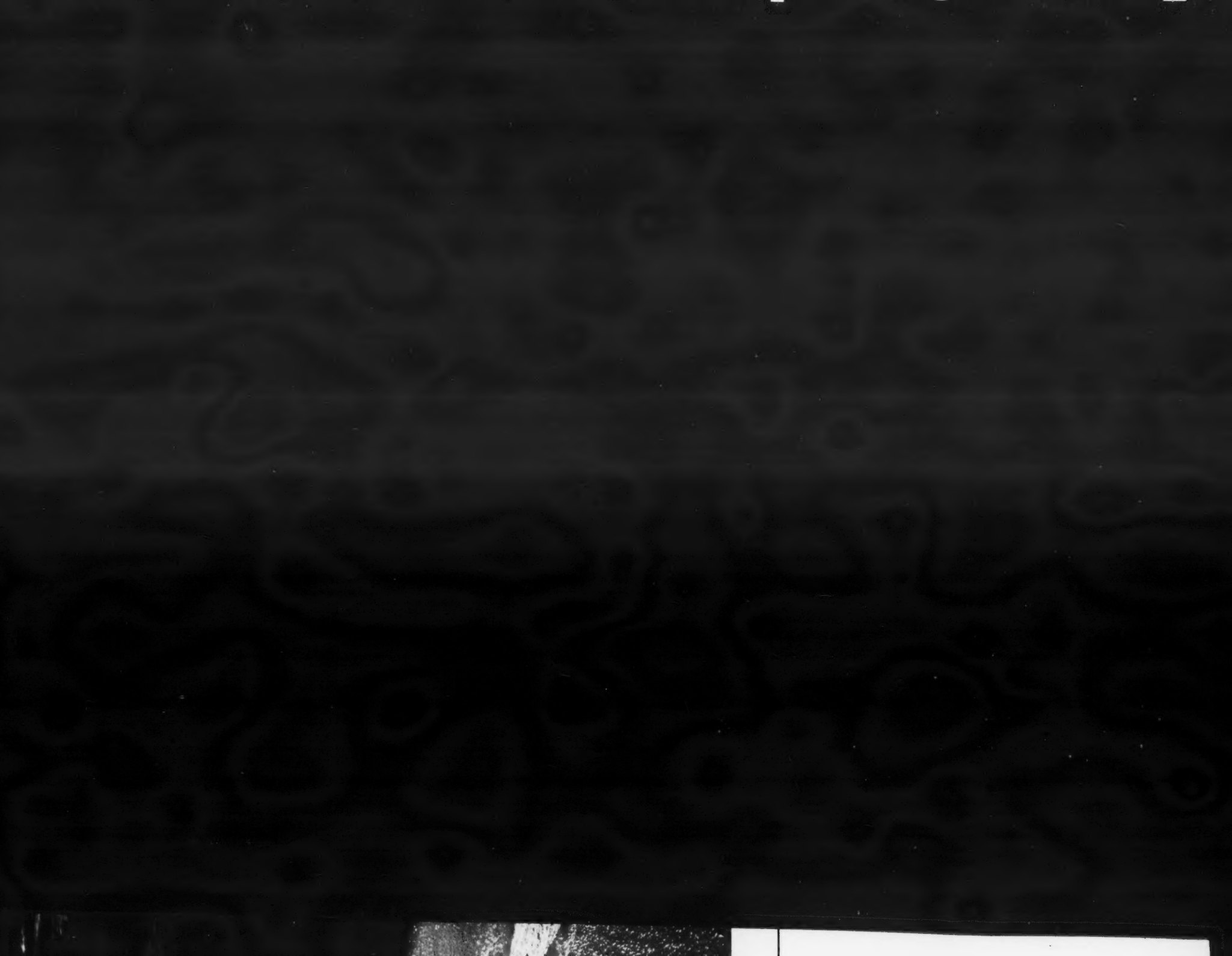


OIL IS BARGED FROM TEXAS REFINERIES BY INTRACOASTAL CANAL AND UP THE MISSISSIPPI TO MID-WEST MARKETS

he features a busy daytime scene at Baytown's railroad loading racks. The refinery skyline, punctuated by lofty pipe stills and cat crackers, forms an imposing background for scores of tank cars waiting to be filled and sent out across the nation.

The handling and rehandling of products necessary to get them to the final consumer is almost incredibly complicated. Who can tell how many times gasoline was handled before it found its way at last into the consumer's car? Who knows from whence it came, or by what route? Who pumped it, metered it from refinery tank to pipe line, stored it for a time along the route and sent it on its way again? What barge or tank ship carried it? What railroad tank car? What motor truck finally brought it to underground storage at the service station?

Valves open at Baytown refinery. Streams of gasoline flow through pipes from storage tanks to dockside. Caught up and diverted through great flexible hoses, these streams pulse into the cargo compartments of ocean-going tankers and low, flat barges. Nothing more than floating storage vessels themselves, tank ships plow two thousand miles through the Gulf of Mexico and the Atlantic and deliver their cargoes at Eastern seaboard terminals. Barges snake through the intracoastal canal and plod northward up the Mississippi River. Wherever waterborne transportation ends, land transportation begins. Pipe lines or railroad tank cars, or both, take up the gasoline and carry it farther inland. Motor trucks, or "tank wagons," make delivery from central storage facilities to retail points. Finally, gasoline which came from Texas supplies power to speed automobiles along a Boston turnpike, or over the Black Hills of the Dakotas.



High Pressure Corrosion

Corrosion in high pressure gas condensate fields is a problem that has added to the work of engineers and research men during the past several years. Tubing, wellhead connections, and flow lines operating under gas pressures up to 6,000 pounds per square inch have been corroding in many wells at an alarming rate. Like other major problems encountered in the oil and gas producing business, very little knowledge or experience gained by other industries was available as a guide to a solution of this problem, and technical men had to "start from scratch."

Basically, there are several ways in which the solution to the problem may be approached. First, because the corrosion is caused by acid waters, alkaline chemicals may be used to neutralize the acids. Second, chemicals that tend to form temporary films on the steel can be used to prevent contact between water and steel. Third, the parts most seriously affected may be lined or coated with metals, plastics, or other relatively inert materials. Fourth, equipment may be built of a corrosion-resistant alloy. In all cases, and particularly in this last case, the problem is not one of availability but of economics. Several suitable alloys are already available, but most of them are many times—as much as ten times—the cost of ordinary steel. What engineers are looking for is an alloy which may be had in sufficient quantities at a cost not more than about three times the cost of steels now used.

In Humble-operated gas fields, all of these methods are being tried and studied—either singly or combined. One of the most interesting phases of the problem is the work that has been done, and is still being done, with alloys. To determine the corrosion resistance of various alloys in high pressure condensate service, Humble engineers placed a "spool" of alloy strips in the flow line serving one of the Katy Field gas wells and left the spool in the line for three months. This spool, containing 140 strips (four separate strips of 35 different alloys), was recently removed and sent to a central laboratory where the individual samples are to be studied and compared with samples of similar spools being tested in six other fields by other companies. These tests will also be correlated with actual field experience with equipment made from a few of the alloys.

The problem is broad; there are many details that require attention. Committees formed throughout the industry are now working most actively on these details.

SPOOL OF ALLOY strips (right) was left in a high pressure gas well flow line for about 90 days. Four strips each of 35 different alloys were tested for corrosion resistance. Below, a gas sample is taken from flow line where the spool has been tested. Bottled gas will be used for laboratory tests.

WIRE SCRAPER, powered by air from the unit's compressor, makes removal of rust and scale faster than with old type hand brushes.

MOBILE REPAIR UNIT is fully equipped to enable crew to do a complete repair job. Lengths of air hose are wound on the spool at left; barrels in the center contain dope and thinner; units such as air drills, spades, scrapers, caulkers and coating spray guns are carried on the rear.

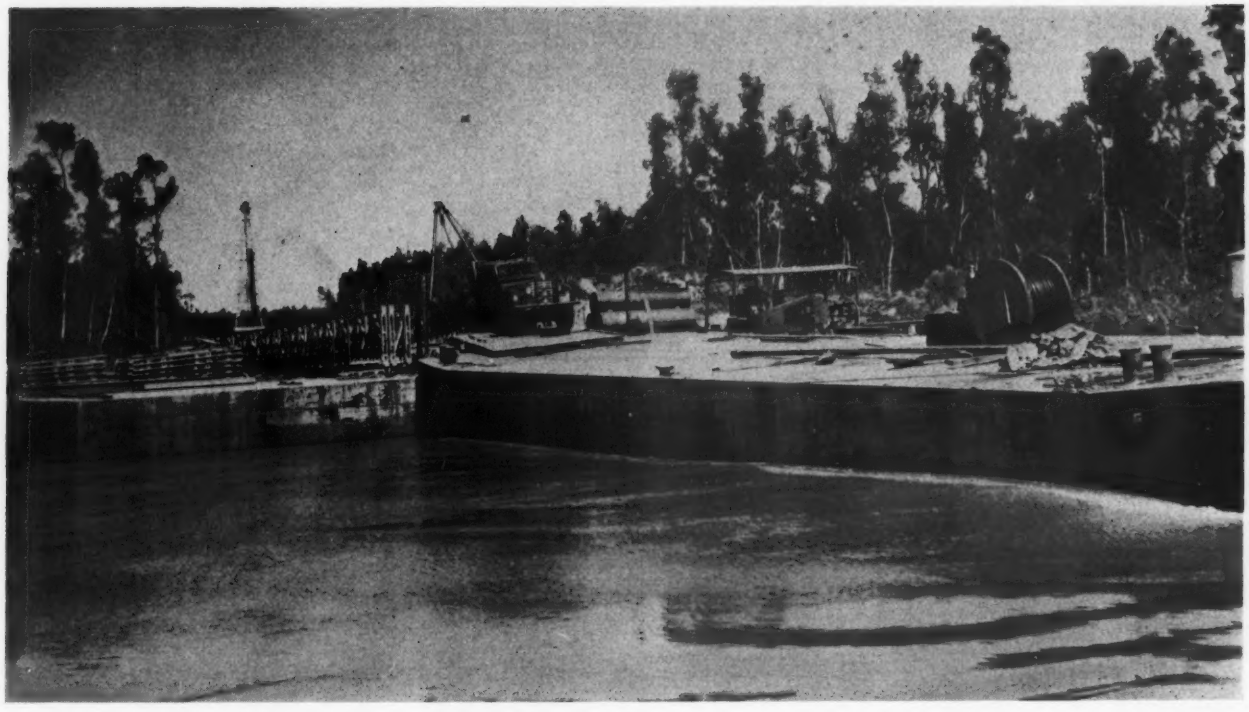
Help on Wheels

An automobile smash-up at a busy intersection brings an ambulance screaming to the scene. A child with a cut finger runs tearfully to its mother for first aid. The petroleum pipe line shows its wounds by sending up enough oil to discolor the ground around the leak. When Humble's flying inspectors spot these dark oil splotches from the air, pipe line repair crews spring into action.

Repairing a pipe line leak, however small, always runs into considerable work. There is digging, scraping, caulking, welding, spraying, and wrapping work to be done, just to mention a few of the necessary operations. A short time ago, Humble Pipe Line repair crews got help for this work—help on wheels, in the form of a mobile repair unit. It is being used for reconditioning parts of lines, as well as for repair work. Mounted on it are an air compressor to furnish power for all its various tools, reels of air hose, and drums of pipe line "dope" and thinner. At the back, in a specially built compartment, are the tools of the unit's trade: air drills, spades, caulkers, scrapers, spray guns for administering protective coating, and the like . . . enough attachments to remind one of the mixing machines modern housewives keep in their kitchens.

The mobile repair unit got its trial run a short time ago on the bank of the Navasota River, at a place where corrosion problems on the main lines to Baytown have been particularly difficult. There on the edge of a Texas cotton field, under a broiling mid-June sun, the unit proved it could make pipe line repair jobs easier and faster.

SPRAYING DOPE with one of the several types of spray guns carried on the unit gives the pipe a smooth, even coat and wastes little dope. Helper at left keeps the hose free; foreman supervises the application.



WATER-TO-LAND LINK FOR HEAVY TRAFFIC IS PURPOSE FOR WHICH ARMY-DEVELOPED BAILEY BRIDGE IS ADAPTED

Bailey Bridge on the Bayou

DOWN in Humble's Bayou des Glaise District in Louisiana, small talk is begun more often by asking, "What's the water level?" than by remarking on the weather. The district is located in the Atchafalaya River Basin, which absorbs much of the Mississippi's floodwaters. It is an area almost completely covered by water, and with a water level which fluctuates as much as 20 feet during the year. To oilmen, who have long since resigned themselves to finding oil in difficult spots, Bayou des Glaise is just another one of those places so hard to reach and move about in that it was almost inevitable that oil should be discovered there.

Conditions which make Bayou des Glaise ideal for a floodwaters disposal area naturally complicate Humble's engineering problems. Operating an oil field calls for a great deal of moving about with heavy trucks and thousands of tons of machinery. This is a man-sized job at best. In areas where there is more water than land, where that water rises and falls with the seasons, and where every road must be built to order, it becomes about as ambitious an undertaking as setting up a swank housing project in the Dismal Swamp.

One of the toughest transportation problems at Bayou des Glaise is the matter of providing a link between land and water; in short, a land-water bridge. Barges laden with drilling machinery and other equipment necessary to keep an oil field going ply the bayous, loading and unloadng their burdens by means of permanent wooden docks built along the shore. This arrangement has not been altogether satisfactory, partly because of the fluctuating water level and partly because very little of the fixed wooden structure can be salvaged when the work is moved to another location. The need has been for a land-to-water connection strong enough to handle heavy loads, simple enough to be put together and knocked down easily and swiftly, mobile enough to be moved from one location to another without special and expensive equipment. If such a device could be made 100 per cent salvageable after each job, so much the better.

These desiderata seemed almost perfectly answered by the Bailey Bridge, a World War II engineering invention that had proved itself capable of handling the heaviest military loads. The Bailey Bridge is mobile, simple, adaptable. Its sections can be transported, put together, knocked down, and moved again almost as easily as a child handles Christmas construction toys.

Many Humble employees had seen the Bailey Bridge in action during their Army service, and had visioned its future usefulness in oil field operations. Bayou des Glaise seemed a logical first place to try it. When one of these bridges—a single story, triple truss affair—became available as surplus war material, its purchase was arranged.

Civil Engineers in the Louisiana Division lost no time in putting the newly acquired Bailey Bridge to its initial test—a test that would give the bridge a chance to show its versatility. A wildcat well, Schwing Lumber and Shingle Company C-1 Wildcat, was to be drilled less than half a mile east of Whiskey Bay Pilot Channel. To serve the wildcat, a landing installation—complete with pipe rack, loading dock, and a

A SET OF ROLLERS is placed near the water's edge and two other sets some distance back. Over these, as the bridge is assembled section by section, it is rolled toward the barge to be anchored about 30 feet out. At upper right is one group of piling to which barge will be anchored.

BRIDGE PANELS are hoisted into position by a crane as members of a small assembly crew fasten them securely in place. Crane also supplies power to pull the bridge out across the water gap to the barge. Use of the crane made it possible to do the job swiftly and easily with few men.

LANDING SECTION is attached pointing upward. The remainder of the bridge is built level and moves outward over stationary rollers and rocking rollers at water's edge. The latter are securely anchored in concrete. Landing section will be removed and stacked away after it clears the barge.

truck ramp—would have to be built on the steep east bank of the channel at a point where the stream was wide, deep, and swift . . . and at a point where the water level varied during the year from plus five to plus 26 feet above mean Gulf level. Thus, the landing ramp itself would have to be strong and capable of adjustment to handle heavy traffic at both high and low water stages.

It was decided to anchor the shore end of the bridge to bearings set in a buried concrete block, allowing the shore end to pivot with the rise and fall of the changing water level. At the water end, the bridge would be supported by a barge, and would be made fast to the barge by another set of movable bearings. Thus, a rise or fall of the water level would be automatically compensated for at both ends of the bridge. The barge would serve as a floating dock—a landing platform for incoming water traffic, a loading platform for outbound land traffic.

In transporting the Bailey Bridge to the point of construction, Humble dovetailed two jobs into one. The barge which ultimately was to become the floating dock for the water end of the bridge was used to float the bridge materials to the site. At the site, bridge sections were unloaded from the barge by crane. The barge was moved out to its position in the channel and made fast by cables to specially prepared piling.

Erection of the Bailey Bridge itself was done with a crew consisting of a foreman and six men. During the war, it took a crew of about 60 men to do a similar job during the Army's rapid drive on the Rhine. Soldier crews assembled the bridge in sections, hooked those sections together, and pushed them forward by sheer manpower over special rollers. The length of the bridge was a flexible matter, being determined by the number of sections used.

Humble's way of putting up a Bailey Bridge differed somewhat from the Army's. The Company's job was made easier—and it took far less manpower—by *pulling* sections forward into place over rocking rollers and plain rollers, using a wire rope running through a pulley attached to the barge. On the shore, a small dragline which provided this pulling power was also used to move panels which formed the bridge's sides and to handle stringers over which the decking was laid. After the entire 80-foot bridge had been pulled into place, one end resting on shore and the

other end on the barge, rollers were removed and bearings were attached to each end of the structure.

The job was done in less than a week.

The fact that an inexperienced crew could put the bridge together and pull it into place in such a short time is significant. In fact, it is expected that the six man crew can do future jobs in even less time, because on this first attempt a slight delay was occasioned by an unexpected rise in the river.

As a result of this first application of the Bailey Bridge to oil field operations, certain modifications have been recommended so that the structure may be used with maximum effectiveness in the future. For one thing, more clearance between bridge and barge may be necessary, so that there will be no contact between the two during high water. To insure this, future installations should be made such that the bridge will always slope downward toward the barge, even when the water level is high.

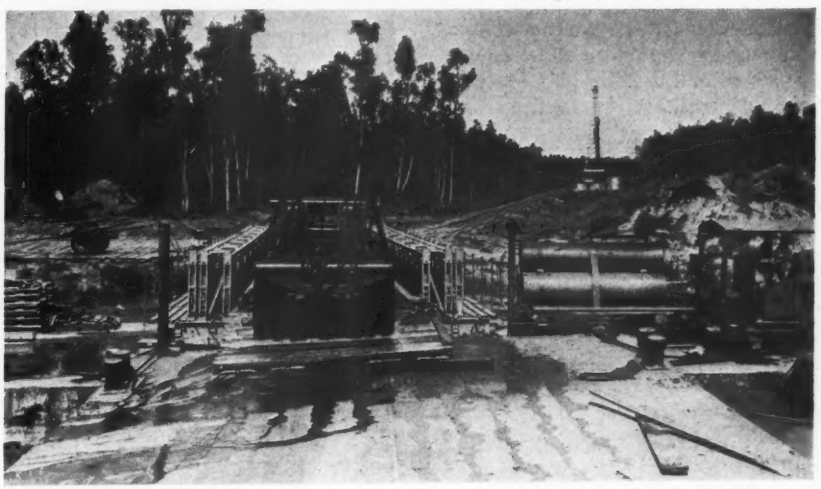
Another modification—one already put into effect on the Bayou des Glaise installation—is a hinged joint for the ramp which connects the floating dock and any barge being loaded or unloaded. A five-ton hoist, placed on the dock barge, is used to raise or lower the ramp to accommodate any type of barge which may be moored alongside. A final modification consisted of placing a layer of 3 x 10 inch planking over the floor of the bridge to protect the lightweight timber decking.

There are two possible ways by which the Bailey Bridge may be moved to a new location—and in either case the bridge would be practically 100 per cent salvageable. One way would be to dismantle it completely, carry it to the new site, and put it up all over again. Another way would be to load it intact on the dock barge and float it thereon to the new location. This second course appears to be the better of the two.

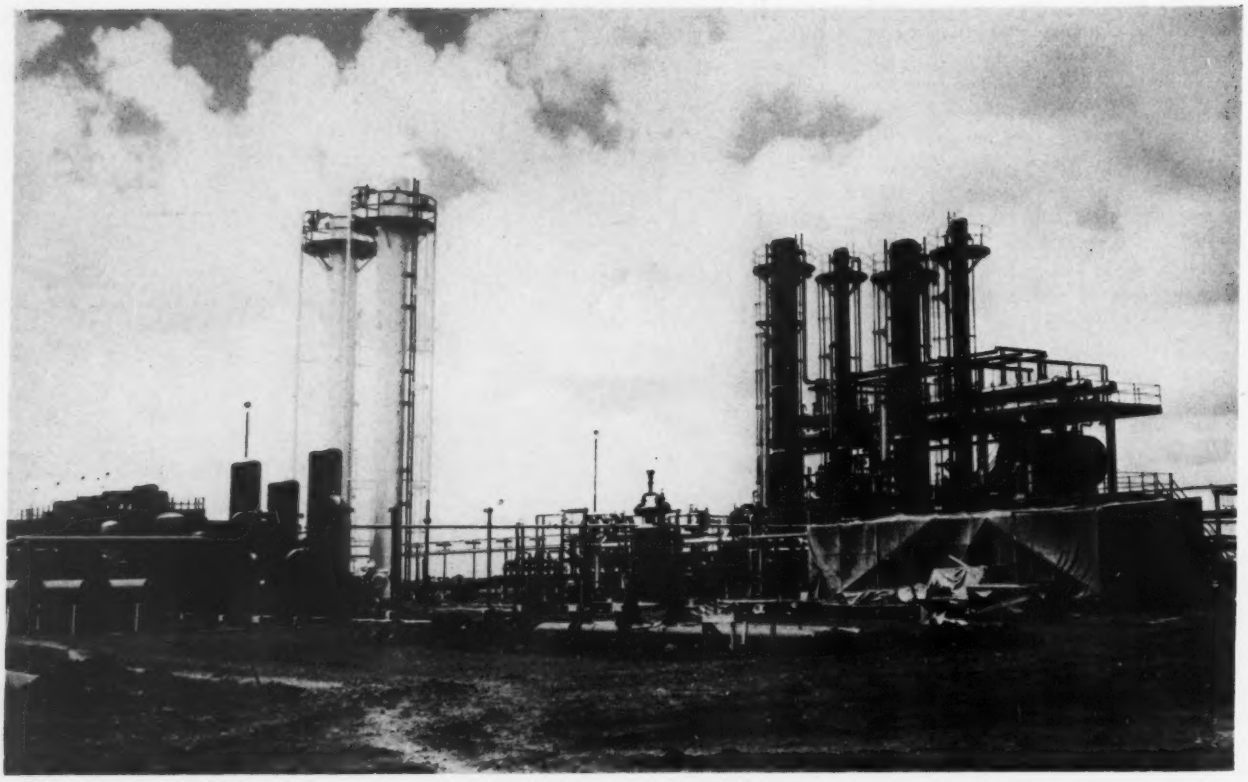
It is now rather clear that the Bailey Bridge as a floating type landing ramp constitutes a satisfactory solution to the problem of a land-water connection. Barges serving drilling locations may pull up to the water end of the bridge and be loaded or unloaded in a short time, under any condition of the water level. The bridge is rapidly and cheaply constructed by labor untrained in its use and is more economical than a fixed-type structure serving the same purpose. Its use reduces the total expense of providing an operations terminal by as much as 30 per cent.

NEARING COMPLETION the span is suspended in space as the landing section is about to reach the barge's edge. After landing section is removed, the bridge proper continues to be moved forward until it reaches the far side of the barge. Bridge will be secured to bearings at both ends.

SUPPLY BARGES may be pulled up alongside the stationary barge and portable materials such as cement, mud, and other supplies may be loaded directly to waiting trucks parked on water side of the Bailey Bridge. Supplies go from here to drilling site less than half a mile away.



SERVICE TRUCKS, or those laden with heavy machinery, may be brought out by barge and transported from the barge to land across the bridge. A five-ton hoist on the anchored barge adjusts ramp for barge level variations. This is a great improvement over stationary wooden structures.



MAIN ABSORPTION-DISTILLATION EQUIPMENT AT ANAHUAC PLANT, OPENED WHILE CONSTRUCTION WORK CONTINUED

Conserving Casinghead Gas

Sixty-five million cubic feet daily of oil well gas formerly flared now processed at new Clear Lake and Anahuac natural gasoline plants

Newest and among the largest of the Humble Company's gas conservation projects completed since the end of the war are natural gasoline plants at Clear Lake and Anahuac, in the Gulf Coast division. The Clear Lake compressor and high pressure natural gasoline plant went into operation on March 14, this year, and the Anahuac plant was started up on August 10.

Cost of the two plants and one auxiliary installation aggregates $5,000,000.

The Clear Lake plant was designed to handle about 32 million cubic feet of oil well, or casinghead, gas daily from the Friendswood, Dickinson, and East Clear Lake fields, and about 19 million cubic feet of gas from gas wells in the Dickinson and Halls Bayou fields.

Seventy-one per cent of the 32 million cubic feet of casinghead gas now being stripped of its liquid content at the Clear Lake plant was formerly flared in the Friendswood field. Another 22 per cent comes from the Dickinson and Gillock fields—gas which was formerly stripped at the Dickinson-Gillock low pressure plant and the residue flared in the field. The other seven per cent was flared in the East Clear Lake field before the plant was built.

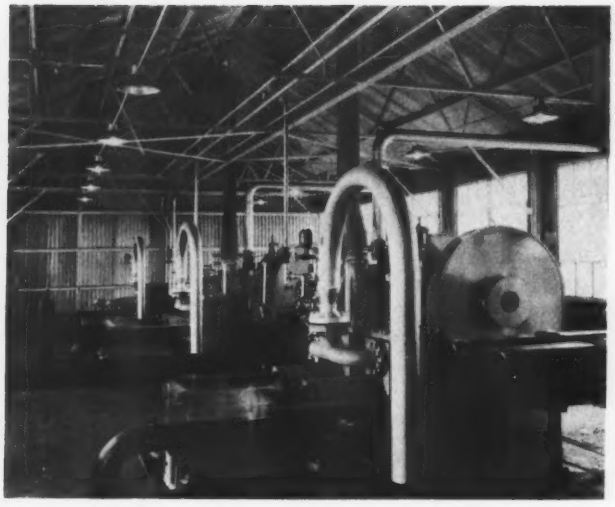
The 19 million cubic feet of gas well gas processed daily at Clear Lake comes from the Halls Bayou and Dickinson fields and was formerly delivered to the Company's Tomball Natural Gas System without stripping.

To deliver the casinghead gas produced in the Dickinson-Gillock fields, a supplementary facility was constructed at Dickinson at a cost of approximately $225,000. This booster plant, equipped with three 600-horsepower compressors capable of handling about nine million cubic feet a day, delivers the casinghead gas from that field under high pressure to the Clear Lake plant for processing. Cost of this unit, added to Clear Lake's $2,250,000 and Anahuac's $2,500,000, brings the total investment in these two major conservation projects to approximately $5,000,000.

Output of the Clear Lake plant currently is 835 barrels a day of de-ethanized gasoline—a mixture of propane, butane, pentanes and heavier hydrocarbons. Since this liquid product is delivered by pipe line to the Company's Baytown refinery, only three horizontal storage tanks adequate for five days' storage are provided at the plant.

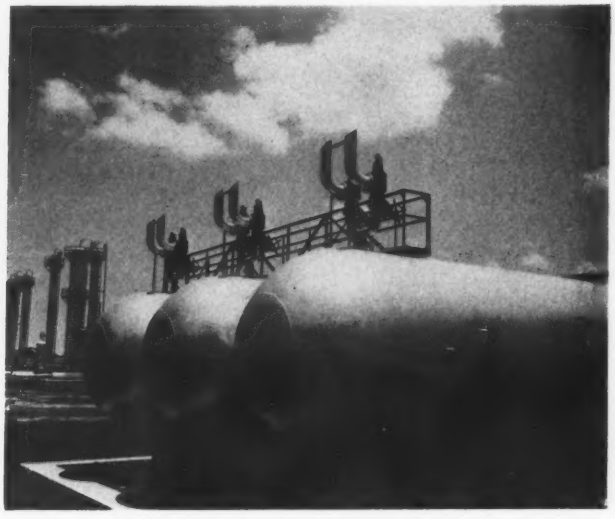
The Anahuac plant has sufficient capacity to process all of the oil well gas produced in the entire Anahuac field, 80 per cent of which is owned by the

LIQUID PRODUCTS totalling 835 barrels are extracted from 51 million cubic feet of gas processed daily at Clear Lake gasoline plant.



HIGH PRESSURE lean oil pumps circulate the absorption oil for extracting the propane, butane, and pentane fractions in the gas processed.

COMPRESSOR PLANT arrangement at Clear Lake plant shows four 1000-horsepower units which boost the gas up to 800 pounds pressure.



PRODUCTS STORAGE tanks at Clear Lake are sufficient for five days' production. This goes by pipe line to Company's Baytown refinery.

Humble Company. On the basis of the Anahuac field's allowable of 26,000 barrels of oil a day, the gasoline plant will process an average of about 32 million cubic feet of wet gas daily; however, the compressor plant and distillation system have a capacity of 45 million cubic feet a day.

The process is designed to recover 99 per cent of the potential pentanes, 85 per cent of the butanes, and approximately 22 per cent of the propane. Daily production of liquid hydrocarbons approximates 540 barrels, and as in the case of the Clear Lake plant, this product is delivered by pipe line to Baytown refinery.

High pressure residue gas from both plants is delivered by pipe line to the Company's Tomball Natural Gas System. Low pressure gas is utilized as plant fuel and for home consumption in employee housing communities built at both plants. At Anahuac some of the low pressure gas is also used to supply the variable fuel demands of the field fuel system.

These two conservation facilities, then, are currently conserving 65 million cubic feet of casinghead gas formerly burned in field flares; are producing about 1,375 barrels a day of useful liquid hydrocarbons; and are delivering some 60 million cubic feet of dry residue gas daily for use as fuel at the Company's Baytown refinery and at other Gulf Coast industrial plants.

In addition to the Clear Lake and Anahuac plants, Humble has a one-half interest in the $3 million conservation plant under construction in the Tomoconnor oil field in Southwest, Texas. And, in keeping with the Company's announced policy of its willingness to cooperate with other operators in any gas conservation measure in fields where it is not a major operator, Humble is participating in projects which are proposed for the Heyser, Flour Bluff, Kelsey, and Sand Hills fields in Texas.

LOOKING AT BOOK which reviews Bert Broday's life and 49-year career in the oil business, left to right: G. Clint Wood, Jr., R. B. Roaper, safety engineer, R. C. Barbour, superintendent of Production, John D. Exner, newly named North Texas assistant division superintendent, D. B. Harris, vice-president, C. E. Reistle, Jr., manager of Production department, and Mr. Broday.

Bert Broday Retires

It was Bert Broday Day in Wichita Falls on June 7. More than 300 employees and their wives and families from all over the North Texas division joined with friends from Wichita Falls and executives from the Houston office to pay tribute to Mr. Broday on the occasion of his retirement from active duty with the Company.

Actual date of Bert Broday's retirement was July 2, the day on which he reached age 65, but the celebration was held on the earlier date, just before he began his final three-week Company vacation.

As a tribute to Mr. Broday, a pheasant dinner was given in his honor at the Wichita Falls Country Club on Friday evening, June 6. Attending the dinner was a group of about 45 men including a number of his friends and former associates in North Texas oil circles, Company executives, and members of the North Texas division staff. J. S. Bridwell, independent oil operator and rancher, acted as master of ceremonies.

President H. C. Wiess, associated with Mr. Broday since Humble Oil & Refining Company was organized in 1917; G. Clint Wood, former drilling partner of Mr. Broday; and Wallace E. Pratt, retired vice-president of Standard Oil Company (NJ) and former vice-president of Humble, recalled highlights of their early acquaintanceship with Mr. Broday. Other speakers were close friends of Mr. Broday and the following members of the Humble Company's Board of Directors: David Frame, D. B. Harris, J. A. Neath, and Rex Baker.

In the course of the evening Mr. Broday was given a deed to the office furniture which he has used for many years and a watercolor painting depicting him as a young cable tool driller.

On Saturday afternoon at Sand Beach recreation park, near Wichita Falls, a crowd of more than 300 employees and friends assembled for a testimonial barbecue dinner. Acting as spokesman for North Texas district employees, Sol Kingsbury, pumper at Avoca, presented a fly rod, reel, and other fishing tackle and an outboard motor to Mr. Broday; a silver tray and a painting of her husband to Mrs. Broday.

C. E. Reistle, Jr., manager of the Production department, presented to Mrs. Broday and to each of the six Broday children an attractive leather bound book containing in pictures and text the highlights of Mr. Broday's life and 49-year career in the oil business.

The review of Mr. Broday's life contained in the book points out these highlights:

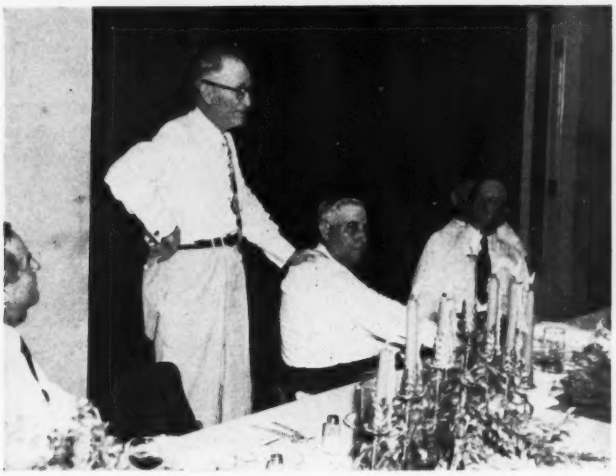
He was the youngest of three boys in a family of eight children and was born at Perrysburg, Ohio, on July 2, 1882. Because of responsibilities on his father's farm at an early age his education was interrupted, but he finished a general course of studies. Although encouraged by his father to follow a career in farming the venturesome youth turned his attention to the oil business early in life. At the age of 16 he became a tool dresser's helper without pay at Caney, Kansas. Following this initial contact with the oil business he was employed by several oil companies in Ohio and Kansas until he found his way to Texas in 1906 as an employee of the Sun Oil Company. After marrying Miss Pauline Walters of New Orleans in 1910, Bert Broday moved to Oklahoma where he worked as a cable tool driller with the Iona Drilling Company until 1912 when he formed a partnership with G. Clint Wood. As a part owner of the Schulz Oil Company and field superintendent for that Company's operations in the North Texas area, Mr. Broday came into the newly formed Humble Oil & Refining Company in 1917 when the Schulz Oil Company was consolidated with several other properties to form the Humble Company.

Bert Broday remained in his capacity as field superintendent, and as the Humble Company expanded in North Texas and elsewhere Mr. Broday continued to serve as superintendent of the growing and busy North Texas division.

In the course of his 30-year career with Humble he was closely associated with the following innovations and improvements: The first crude oil pipe line for Humble; Humble's first products line for transporting gasoline; the first Humble Gasoline plant; the first gas-tight crude oil lease tank; the use of fuel oil instead of crude oil for firing boilers on drilling rigs; application of electric power to band wheels for pumping wells; and installation of electrically driven rotaries on drilling rigs.

The book reviews his life as an oil man, a family man, a rancher, and sportsman. During the two events honoring him he was eulogized as a leader and trainer of men by a number of Company executives who had spent the early years of their lives under his direction.

The opening page of the book, signed by H. C. Wiess, president; David Frame, vice-president; C. E. Reistle, Jr., Manager of the Production department; and R. W. Barbour, general superintendent, reads in part: "The story of Bert Broday's working life with Humble is a history of accomplishment. His judgment was sound, his leadership vigorous, his ability unchallenged. The memory of his many years of fruitful service will live long with us."



FORMER PARTNER, G. Clint Wood, Sr., with hand on Mr. Broday's shoulder, reviews their long friendship and early business connections.

OFFICE FURNITURE used by Mr. Broday for many years was deeded to him by Vice-president David Frame at the Country Club banquet.

WATER COLOR painting entitled, "Bert Broday, Rope Choker," was presented to the annuitant and was held aloft by C. E. Reistle, Jr.

GUESTS ATTENDING dinner honoring Mr. Broday included North Texas oil circle friends, Company executives, and division associates.

GIFTS PRESENTED from the Division by Avoca district pumper Sol Kingsbury, right, included a large silver tray for Mrs. Broday and various pieces of fishing tackle and outboard motor for Mr. Broday.

BARBECUE DINNER with trimmings was served to a group of more than 300 employees and their families and friends of Mr. Broday at Sand Beach recreation park, near Wichita Falls, on Saturday afternoon.

By the way . .

They Have Retired

Sixteen employees have added their names to the retired list since last we reported By the Way, retiring either after reaching age 65 or taking advantage of the early voluntary retirement feature of the revised Annuity & Thrift Plan. CARL D. STOKES, Production department lease pumper-gauger at London, retired on April 1 . . . FRANKLIN H. SLINK, Production department assistant district gauger at Alice, on May 16 . . . AUDIE E. LESLIE, Production department field engineer at London, on May 23 . . . MYRTLE T. ELKINS, Traffic department secretary at Baytown refinery, on June 2 . . . FREDERICK B. GRANT, Production department crum boss at Pickton, on June 14 . . . JOE E. ARMSTRONG, Humble Pipe Line Company engineer at San Angelo station, on June 17 . . . EDWIN CARTER, Humble Pipe Line Company oiler at Todd station, on June 24 . . . GILBERT Y. VIDRINE, Humble Pipe Line Company district gauger at Baytown, on June 26 . . . JOE C. HAZLEWOOD, steam trap repairman at Baytown refinery, on June 29 . . . IRA J. DUBOSE, janitor at Baytown refinery, on June 28 . . . ALBERT E. BRODAY, Production department division superintendent at Wichita Falls, on July 2 . . . JOHN J. FARLEY, Humble Pipe Line Company tank foreman at Comyn, on July 3 . . . WILLIAM O. DENDY, Production department lease pumper-gauger at Wink, on July 9 . . . JAMES F. FELTON, special laborer at Baytown refinery on July 13 . . . THOMAS E. COOPER, Humble Pipe Line Company head stock gauger at San Angelo, on July 19 . . . and DOC G. TAYLOR, reclamation shop foreman at Baytown refinery, on July 22.

Employee Deaths

Death claimed 14 employees and three annuitants since the last *Humble Way* went to press. FRANK W. SKALNIK, 59, engineer at Humble Pipe Line Company's Hastings Station, died on June 3 . . . BAYLISS E. GULLETTE, 40, San Antonio sales district warehouse supervisor, died on June 6 . . . HENRY L. DANIEL, 48, Production department roustabout at Gladewater, on June 19 . . . SOLON A. BURKETT, 57, Production department farm boss at London, on June 25. . . . HORACE B. MATTHEWS, 43, Production department pumper and lease gauger at Thompsons, on June 25 . . . JAMES A. MANUEL, 58, boilermaker first class at Baytown refinery, on July 1 . . . MRS. WILLODEAN YOUNG SANFORD, 22, clerk-stenographer in the Southwest Texas Production Division office, on July 6 . . . CARL H. FREY, 43, helper third class at Baytown refinery, and BERNARD W. WUNSCH, 27, helper at Baytown refinery, on July 13 . . . EDDIE J. DANIELS, 33, machinist first class at Baytown refinery, on July 16 . . . MISHELL ANDRES, 32, laborer at Baytown refinery, on July 19 . . . SCOTT C. PRUITT, 29, roustabout for the Production department at Means, on July 21 . . . BYRON DOLAN, junior title man in Mississippi, on July 26 . . . ROY A. LAIRD, 26, laboratory assistant first class at Baytown refinery, on July 26.

Annuitants who have died since last publication date are: ALBERT S. BREWER, 67, local sales manager at Jacksonville until his retirement, died April 22 . . . GEORGE L. PRAY, 71, pumper for the Production department at Holliday until his retirement, died June 6 . . . ROBERT L. MORRIS, 40, Humble Pipe Line Company main line engineer at Groesbeck station until his retirement, died June 19.

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Published every other month for employees and stockholders

HUMBLE OIL & REFINING COMPANY

P. O. BOX 2180, HOUSTON 1, TEXAS

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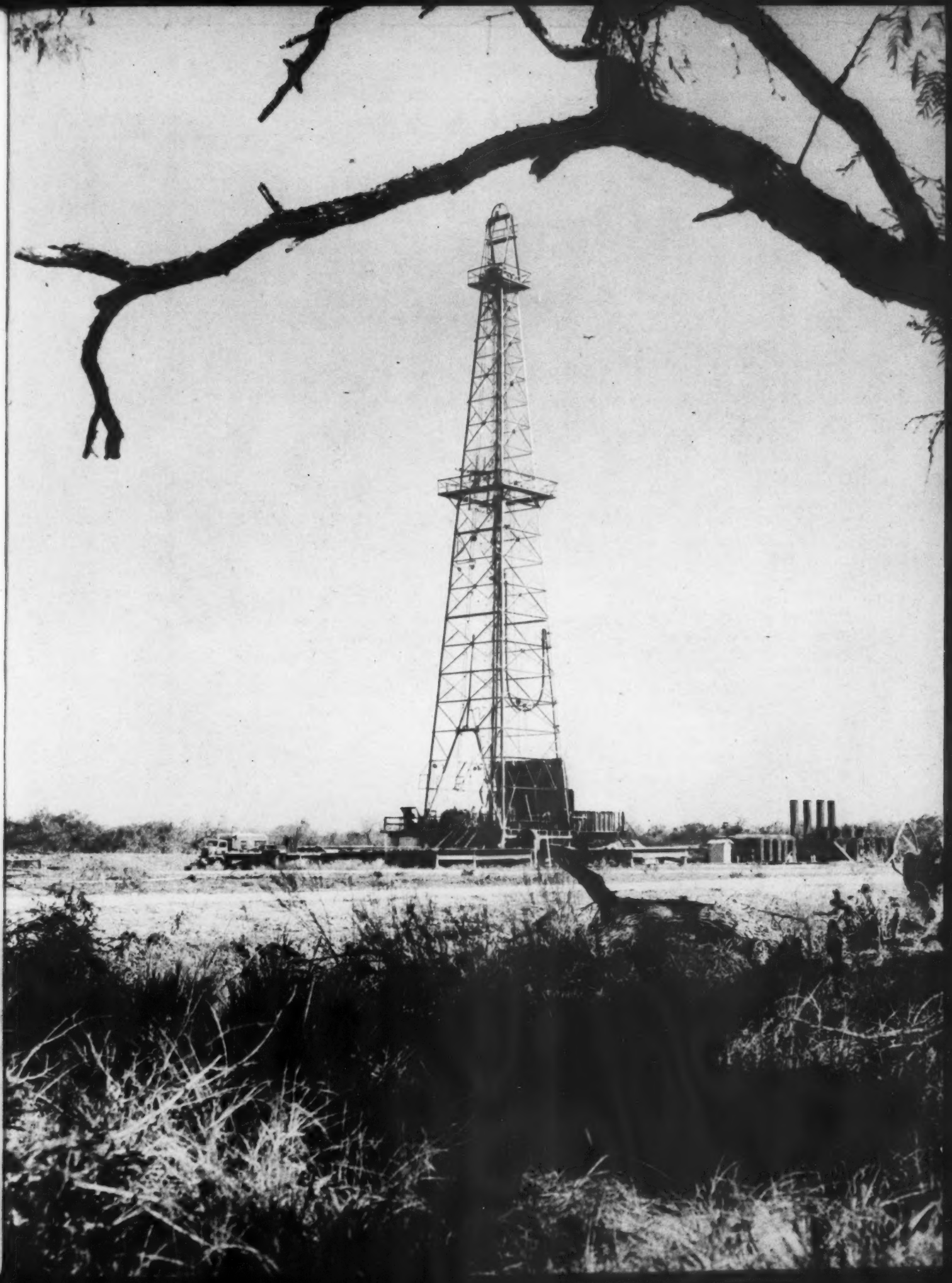
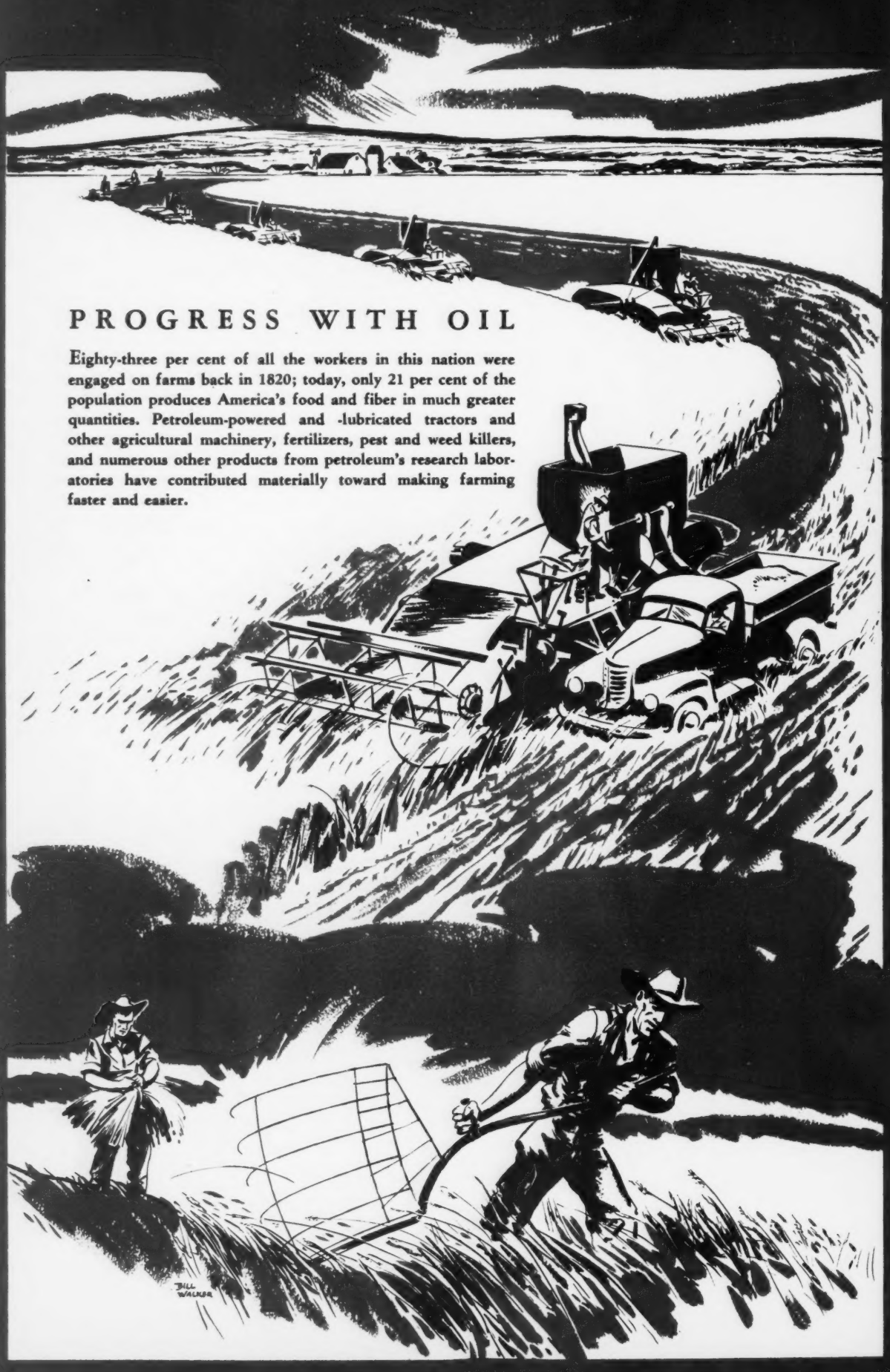
JACKSON LEE NESBITT, 34-year-old Kansas City artist, who painted the movement of refined products to market as shown on the cover and on Pages 12 and 13, has had his work exhibited in leading galleries from New York to San Francisco. He studied painting and etching under Thomas Hart Benton and John de Martelli at the Kansas City Art Institute, and has already won numerous scholarships and awards. Nesbitt is best known for his etchings, but his handling of color and fine detail in tempera paintings of industrial subjects has earned for him a place among today's leaders in that field of art.

JACKSON LEE NESBITT

WILDCAT WELLS on the prairies, in the marshes and mountains, and in shallow Coastal waters are signposts of the oil industry's unending search for new reserves.





PROGRESS WITH OIL

Eighty-three per cent of all the workers in this nation were engaged on farms back in 1820; today, only 21 per cent of the population produces America's food and fiber in much greater quantities. Petroleum-powered and -lubricated tractors and other agricultural machinery, fertilizers, pest and weed killers, and numerous other products from petroleum's research laboratories have contributed materially toward making farming faster and easier.